BLOCK TRADE ANALYSIS: EVIDENCE FROM EUREX INTEREST RATE FUTURES

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INTRODUCTION

Block trades are privately negotiated transactions typically larger than their exchange-traded counterparts. Much has been written about block trades and their impact on microstructure. Academic papers such as Seppi[**seppi1992block**] [1] and [2] are a few to cite. Our current research focuses on block trades in Eurex futures interest rate (IR) product calendar spreads. Our focus on the rate calendar spread is motivated by the pattern observed in the enhanced trading activity of the blocks during the start of the calendar spread roll periods in the Eurex IR products.

The analysis is based on the historical sample received from the Eurex A7 platform. The specific focus of this research is futures on Euro-Bund, Euro-Schatz, Euro-Bobl, Euro-OAT, Euro-Buxl, Euro-BONO, and Long and Short-Term Euro-BTP and we look at the period between November 2016 and March 2023. This article summarizes block trading on the spread contract on a few actively traded interest-rate futures on Eurex. The report also analyses the price impact of the block trades for the spread contract.

DESCRIPTIVE STATISTICS

Table 1 summarizes the number of trades reported for each product and the total volume traded for each in decreasing order of magnitude. The Euro-Bund contracts lead market volumes for block trading on the spread contract.

Table 2 shows that the most traded calendar spread blocks are usually in Mar and Sep. However, there are exceptions to this. For example, FGBM trading is spread uniformly across all four roll dates.

VOLUME PROFILES

We look at the volume profiles for block trades in isolation and then also compare the volume profile for block trades in proportion to the reported spread volume. Figures 1 and 2 show the progress of cumulative block volumes through time. Figure 1 shows that FGBS (Schatz) block volumes lead other products in the Germany bucket. For Europe Ex-Germany futures, there is no clear pattern in this regard. We also look at the block

[1] https://www.jstor.org/stable/2962032
[2] https://www.jstor.org/stable/2696738

TABLE 1

Product	Symbol	N-BlockTrades	Total-Block-Volume(K)
Euro-Bund Futures	FGBL	740	2,533
Euro-Schatz Futures	FGBS	370	2,292
Euro-Bobl Futures	FGBM	374	1,464
Euro-OAT Futures	FOAT	1228	1,221
Long-Term Euro-BTP Futures	FBTP	978	783
Euro-Buxl® Futures	FGBX	1276	628
Short-Term Euro-BTP Futures	FBTS	523	523
Euro-BONO Futures	FBON	13	6

TABLE 2

	Product	MarVol(%)	JunVol(%)	SepVol(%)	DecVol(%)
1	FGBL	35	16	32	17
2	FGBS	32	21	29	19
3	FGBM	27	24	20	29
4	FOAT	25	32	14	29
5	FBTP	30	21	28	21
6	FGBX	26	15	28	31
7	FBTS	30	17	33	20
8	FBON	28	30	11	30

volumes through time as a proportion of the total spread volume for the German interest rates future spreads. Typically, block trades in calendar spreads are a more significant portion of the calendar spread volume earlier in the roll period. As seen in Figure 3, the Euro-Schatz spread trading in blocks that occur 14 business days before expiry constitutes 85%

TRADE CLASSIFICATION

Trade classification data is not readily available in the block trading data from the Eurex A7 platform. We rely on internal quote data on the spread contract to infer if a trade was buy or sell initiated. If the trade occurred nearer the prevailing bid, it was classified as a sell and vice versa. As the coverage of this internal quote dataset is smaller, we use a version of the Lee-Ready(1991) trade classification algorithm to classify the remaining trades in the dataset. To assess if the trade imbalance between buy and sell trades has any predictive value to forecast change in EOD spread, we perform a regression of the form:

$$\Delta p_{T+1/T} \sim \frac{\sum BuySellIndicator\ .\ TradeSize}{\sum TradeSize} \tag{1}$$

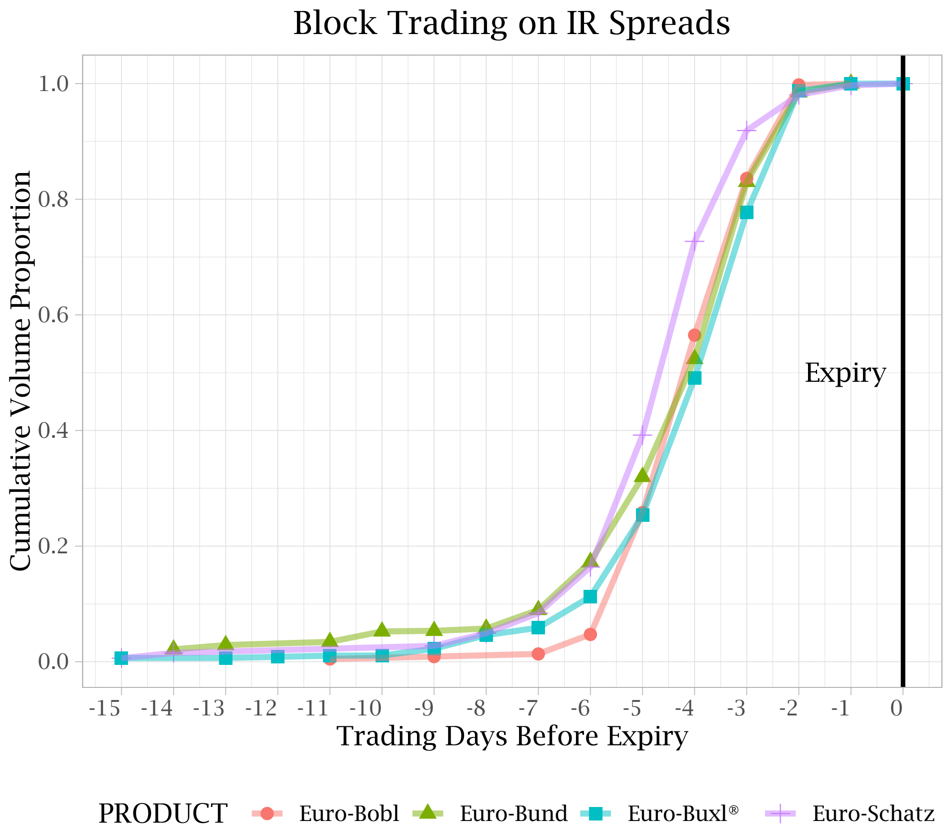
However, we do not find the results statistically significant and do not report them here.

MICROSTRUCTURE ANALYSIS

This section compares our internal transaction cost metrics on the spread contract on FGBL and FGBM to the costs block traders face. We look at slippage for 1) Block traders and 2) QB's BOLT, ROLL, and NEWBOLT algorithms using two methodologies:

FIGURE 1 Cumulative Volume for Block Trading on Spreads (German Underliers)

Spread block trading cumulative volume proportions to expiry



1. Assuming a flat block trading slippage of 0.5 ticks on the spread contract
2. Using roll's (1984)[**roll1984simple**] estimation technique to measure implied bid-ask spreads and then using half of this estimate as the average slippage costs for block traders

For the first comparison, we assume block traders face an average slippage cost of 0.5 ticks. Figure 4 shows QB's BOLT and ROLL executions over the past seven years. A linear estimate of the fit (brown line) fits under the 0.5 ticks estimate (black dashed line) that block traders are assumed to face. Although data on the ROLL algorithm is sparser than the data for BOLT, we find ROLL to have a lower linear estimate of slippage costs, albeit with a higher variance.

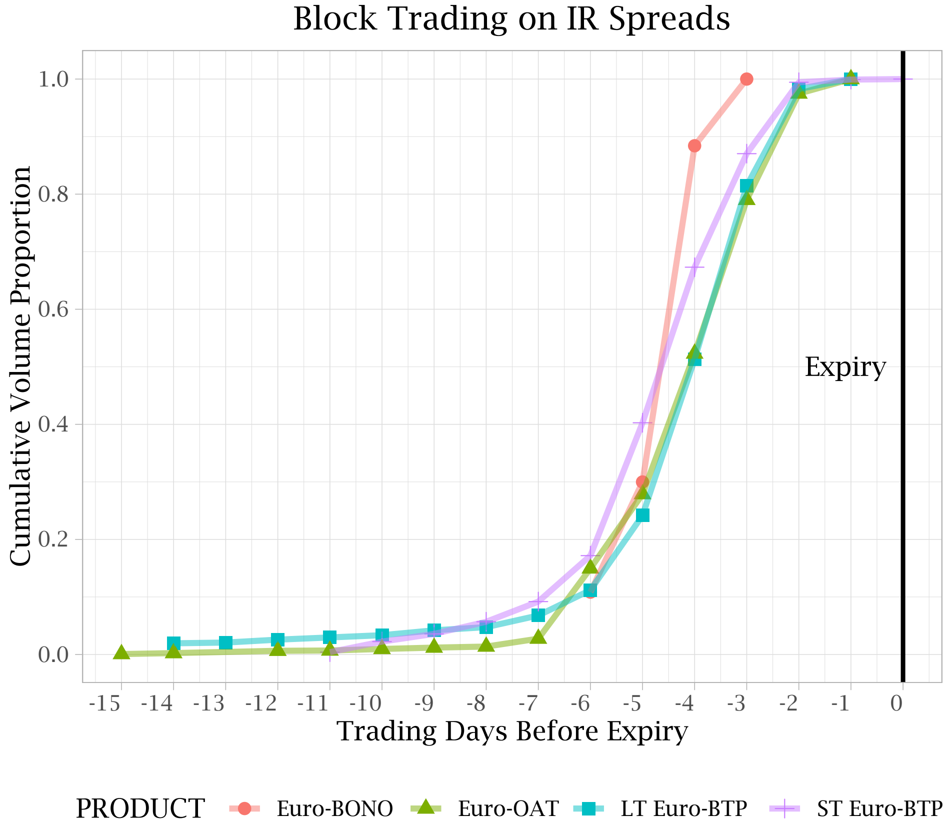
Roll[1984][**roll1984simple**] proposed an innovative way to measure bid-ask spread from trading data. In particular, the formulation that is arrived at is

$$Spread = 2\sqrt{-Cov} \tag{2}$$

Using the above expression to derive the implied bid-ask spread for block traders and assuming that average slippage is half of this effective bid-ask spread, we arrive at Figure 5. QB estimates for slippage are from internally reported metrics that track slippage over the past seven years for existing algorithms. We note that although volumes for block trades are marginally larger than the volumes that QB's BOLT and NEWBOLT execute

FIGURE 2
Cumulative Volume for Block Trading on Spreads (Europe Ex-Germany Underliers)

Spread block trading cumulative volume proportions to expiry



daily, there is a significant difference in slippage between block traders and QB's algorithms, with QB's algorithms having lower slippage. This is observed even while accounting for statistical error in the estimation process, as the error bars show. The same results are seen in Figure 6 for the FGBM product on Eurex, although the data is more sparse compared to FGBL.

SUMMARY AND CONCLUSIONS

Our primary finding is that block traders appear to have a slippage more than QB's clients regularly face. This result must be caveated by the observation that the volumes observed in block spread trades are much larger than the ones QB executes on the spread contract. A future study could extrapolate the existing costs in QB's database to see the equivalent costs for trading larger block spread trades. We find that early traders of the spread are primarily block traders; in fact, sometimes block traders constitute more than 80%

FIGURE 3
Block trading on spreads as a proportion of total spread volume (German Underliers)

Spread block trading - spread block volume proportions to total spread volumes

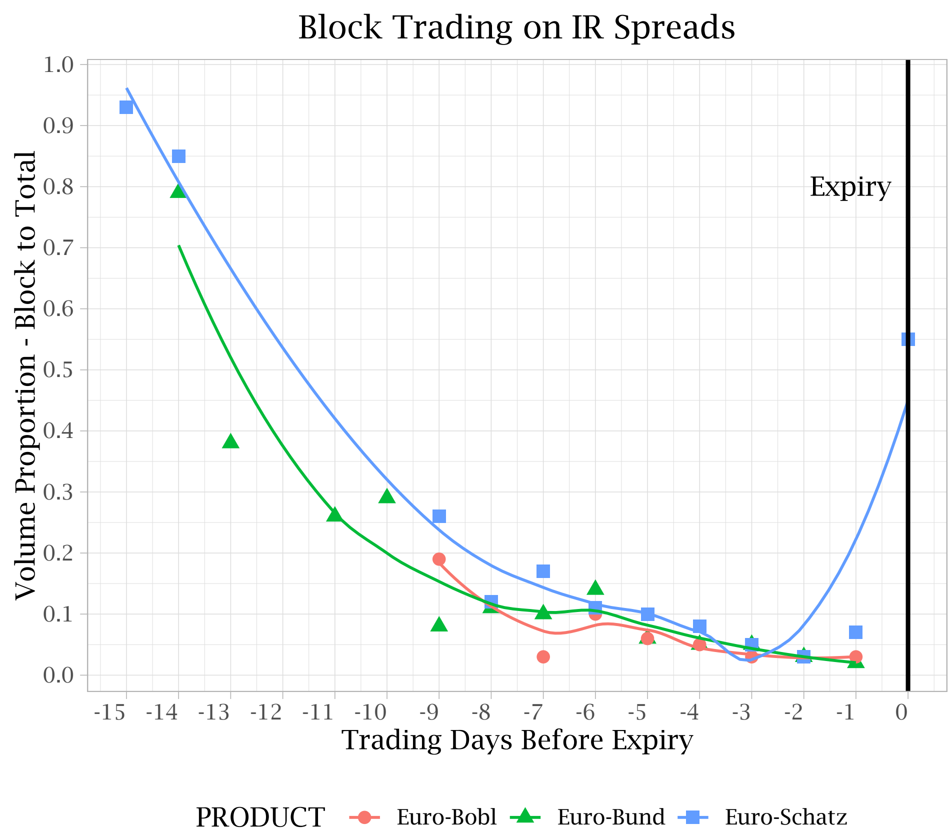


FIGURE 4
FGBL spread trading costs for QB algorithms compared to what block traders face in the market - assuming block traders face half a tick

Interest rate futures spread block trading costs: FGBL

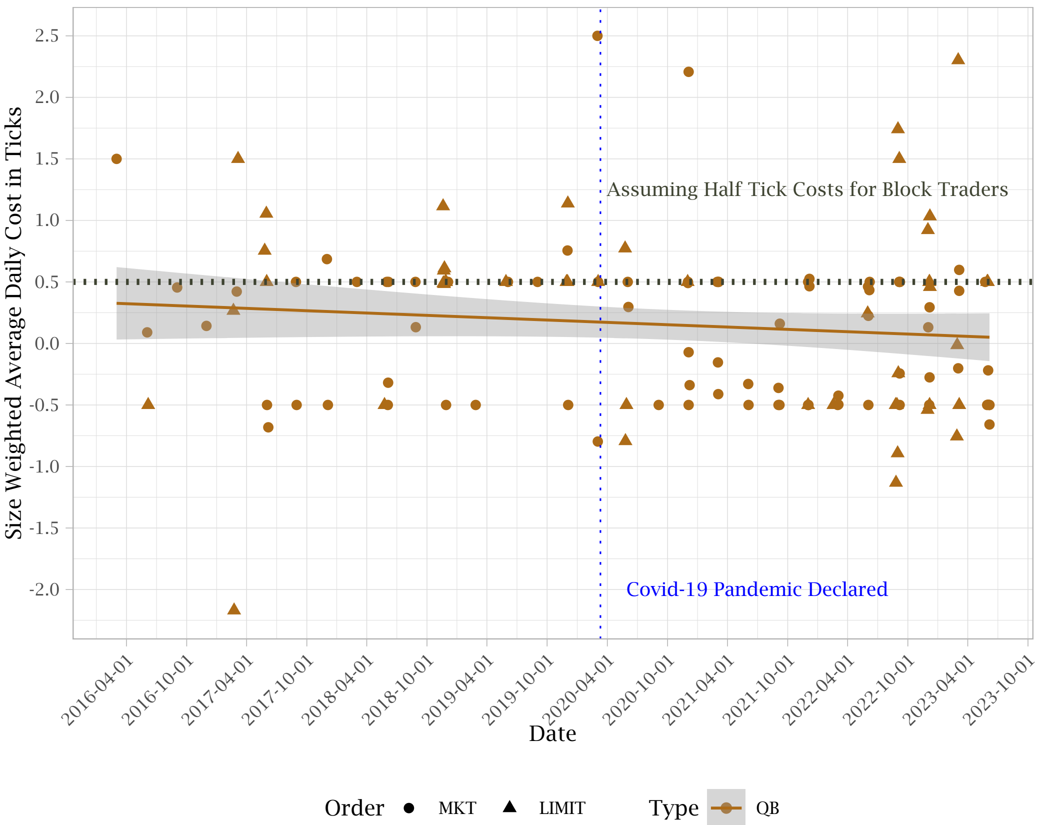


FIGURE 5

FGBL spread the average cost of trading for block traders compared to QB's execution costs. Block trader costs estimated using roll's implied spread methodology

Spread block traders' effective trading costs compared to QB costs: FGBL

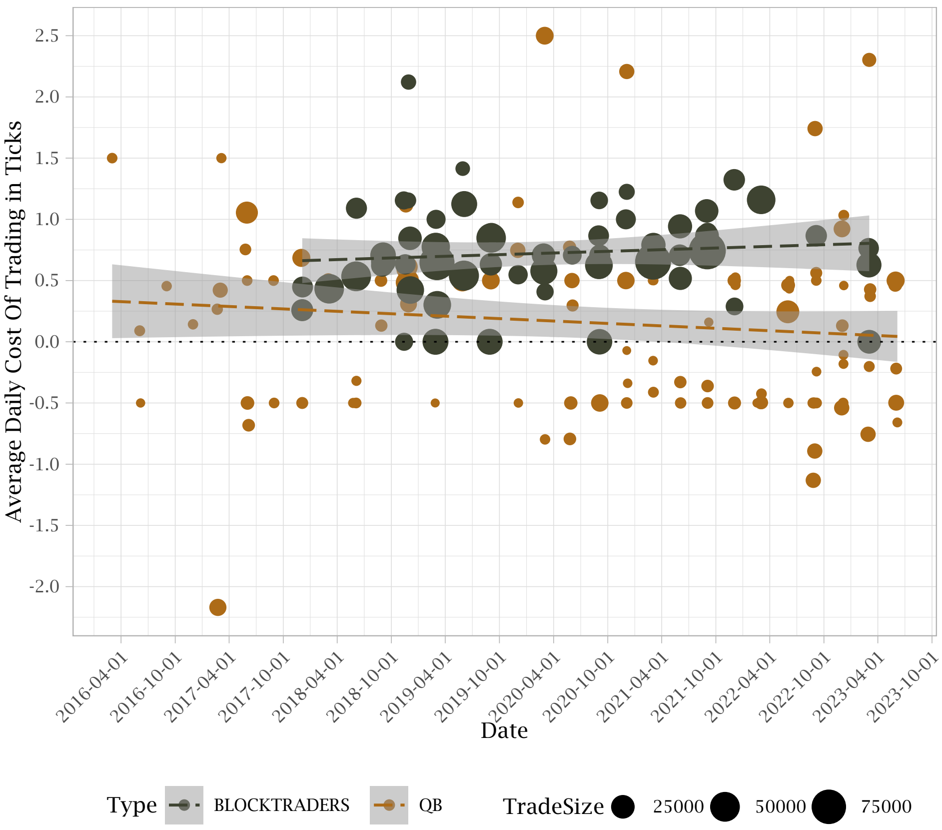


FIGURE 6

FGBM spread the average cost of trading for block traders compared to QB's execution costs. Block trader costs estimated using roll's implied spread methodology

Spread block traders' effective trading costs compared to QB costs: FGBM